



## **FEDERAL HELIUM PROGRAM BUREAU OF LAND MANAGEMENT**



### **FREQUENTLY ASKED QUESTIONS**

#### **What is Helium?**

Helium is the second most abundant element in the universe after hydrogen. It is a colorless and odorless inert gas that has unique properties.

#### **What makes helium unique?**

Helium has many special characteristics that make it an important resource. Of all the elements, helium is the most stable; it will not burn or react with other elements. Helium has the lowest melting and boiling points. It exists as a gas except under extreme conditions. At temperatures close to absolute zero, helium is a fluid; most materials are solid when cooled to such low temperatures.

#### **Where does it come from?**

Helium is a non-renewable natural resource that is most commonly recovered from natural gas deposits. Geologic conditions in Texas, Oklahoma, and Kansas make the natural gas in these areas some of the most helium-rich in the United States. International sources of natural gas tend to have lower helium concentrations.

#### **Why is helium a strategic natural resource?**

First, a strategic resource is: a resource that is needed to supply the military, industrial uses, and essential civilian needs. Helium is a critical component in many fields of scientific research, is needed in a number of important high-technology manufacturing processes, is indispensable to the US space exploration program, and plays an important role in defense activities on the battle field. For many of these uses there is no substitute for helium, so when shortages occur, operations must cease. Helium is also a non-renewable resource, it is only found in a few locations and many of the deposits in the US are being depleted. Accordingly, the US has an important interest in ensuring that critical users have an uninterrupted supply of helium. This was the original reason for creating the Helium Reserve.

#### **What is the Bureau of Land Management's (BLM) role in the Federal Helium Program?**

Amarillo, Texas is home to America's Federal Helium Program (Program). The BLM Amarillo Field Office staff operates and maintains the only government helium storage reservoir, plant, and pipeline system in the country.

**Why should anyone care about the Federal Helium Program?** The Federal Helium Program provides about 42% of the nation's helium. Without this source of helium, a national and global shortage of helium is inevitable with significantly higher prices expected for the limited supply.

In addition, a shutdown of the Federal Helium Program would result in loss revenue to the U.S. Treasury averaging \$430,000/day from crude helium sales, royalties and other related operations.

### **What is Helium used for?**

Helium is an essential resource for the aerospace industry, computer chip and optical fiber manufacturing, for medical uses including MRI magnet cooling, lung tissue visualization, heart catheterization methods, and medical lasers, aluminum helium arc welding, and scuba diving mixtures. Helium is also used in national defense applications such as rocket engine testing, scientific balloons, and blimps. Surveillance devices, air to air missile guidance, and systems testing are just some of the military uses for helium. The most recognized uses for helium gas are party and parade balloons. However, these make up a very small percentage of the overall demand for helium.

For more detailed descriptions:

- The medical field uses helium in essential diagnostic equipment such as MRI's. The first laser invented, a helium-neon laser, is today used in laser eye surgery.
- Helium is used to cool some thermographic cameras and equipment. This type of equipment detects heat instead of visible light helping search and rescue teams can locate people in rubble or through smoke, allowing electricians to find overheated electrical equipment in need of repair, and medical professionals monitor certain physiological processes.
- Various industries use helium to detect gas leaks in their products. Helium is a safe tracer gas because it is inert. Manufacturers of aerosol products, tires, refrigerators, fire extinguishers, air conditioners and other devices use helium to test the seals of their products before they come to market.
- Cutting edge space science and research requires helium. NASA uses helium to keep hot gases and ultra-cold liquid fuel separated during lift off of research/experimental rockets and formerly, the space shuttle.
- Helium is part of the guidance correction systems for air-to-air missiles used by our military.
- Arc welding uses helium to create an inert gas shield. Similarly, divers and others working under pressure can use a mix of helium and oxygen to create a safe artificial breathing atmosphere.
- Helium is a protective gas in titanium and zirconium production and in growing silicon and germanium crystals.
- Since helium doesn't become radioactive, it is used as a cooling medium for nuclear reactors.
- Cryogenics, superconductivity, laser pointers, supersonic wind tunnels, cardiopulmonary resuscitation pumps, Aerostat monitoring blimps used by the Border Patrol, and liquid fuel rockets all require helium in either their manufacture or use.
- And, of course, filling party and parade balloons with a safe, non-flammable gas.

**Who are some of the Government Users of Helium and the communities that might be affected by a shutdown of the Federal Helium Program?**

| User  | Location                   |
|---|----------------------------|
| Department of Defense                               | Los Alamos, NM             |
| Nat'l Institute Of Standards                        | Gaithersburg, MD           |
| NASA, Johnson Space Center                          | Las Cruces NM              |
| NASA, Marshall Space Center                         | Huntsville, AL             |
| NASA, Columbia Scient Balloon                       | Fort Sumner, NM            |
| Naval Research Lab.                                 | Washington, DC             |
| Lawrence Berkeley Nat Lab.                          | Berkeley, CA               |
| Department of Commerce, NOAA Labs                   | Boulder, CO                |
| Argonne Nat'l Lab, Department of Defense            | Argonne, IL                |
| Department of Defense, Battelle Pac Nw Lab          | Richland, VA               |
| Department of Defense, Brookhaven Nat'l Lab         | Upton, NY                  |
| Defensive Logistics Agency, Dartmouth College       | Hanover, NH                |
| Naval Weapons Center                                | China Lake, CA             |
| Colorado School Of Mines                            | Golden CO                  |
| Defensive Logistics Agency, Trlr Bayton P/U Blm     | Baytown, TX                |
| Univ Of Montana Tech                                | Butte, MT                  |
| Desc, Trl City Of Industry                          | City Of Industry, CA       |
| Defensive Logistics Agency                          | Grove City, OH             |
| Defensive Logistics Agency                          | Bethlehem, PA              |
| Defensive Logistics Agency                          | Orlando, FL                |
| Defensive Logistics Agency                          | Otis, KS                   |
| Defensive Logistics Agency, Phillips Lab            | Edwards Air Force Base, CA |
| Defensive Logistics Agency, Spawar                  | San Diego, CA              |
| US Air Force Academy                                | Colorado Springs, CO       |
| Department of Defense, Fermilab                     | Batavia, IL                |
| Defensive Logistics Agency, Middlebury College      | Middlebury, VT             |
| Smithsonian Institute                               | Cambridge, MA              |
| Langley Research Center                             | Hampton, CA                |
| Defensive Logistics Agency, Univ Of Utah            | Salt Lake City, UT         |
| US Army Dugway Proving Ground                       | Dugway, UT                 |
| Defensive Logistics Agency, Arizona State Univ      | Tempe, AZ                  |
| Defensive Logistics Agency, Montana State Univ      | Bozeman, MT                |
| US Army Research Lab.                               | Adelphi, MD                |
| Defensive Logistics Agency, Rice University Physics | Houston, TX                |
| Kirtland Air Force Base                             | Albuquerque, NM            |
| Linde Helium Me Fzco                                | Dubai, UAE                 |
| Department of Defense, Sandia Nat'l Lab             | Albuquerque, NM            |
| NASA, Jet Propulsion Lab                            | Pasadena, CA               |

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|--|--------------------------|
| NASA, L&M Technologies   | Jsc, Houston, TX         |
| Department of Defense, Fermi Natl Accel Lab  | Soudan, MN               |
| Department of Energy, Los Alamos Natl Lab  | Los Alamos, NM           |
| NASA   | Greenbelt, MD            |
| NASA, Langley Research Center  | Hampton, VA              |
| National Institute of Health   | Bethesda, MD             |
| National Institute on Aging  | Baltimore, MD            |
| US Army Medical Research Institute of Chemical Defense                                     | Aberdeen Prving Grnd, MD |
| USG Desc   | San Antonio, TX          |
| Stanford University  | Stanford, CA             |
| Cal Tech   | Pasadena, CA             |
| Florida State University   | Tallahassee, FL          |
| Harvard University   | Cambridge, MA            |
| Massachusetts Institute Of Tech  | Cambridge, MA            |
| Univ Of Michigan   | Ann Arbor, MI            |
| Northwestern Univ  | Evanston, IL             |
| Oregon Health Science Univ   | Portland, OR             |
| Univ Of Va Physics   | Charlottesville, VA      |
| Univ Of Va Test Lab  | Newport News, VA         |
| Michigan State University  | East Lansing, MI         |
| Honeywell International Inc - Tempe  | Tempe, AZ                |
| Ut - Battelle Llc  | Oak Ridge, TN            |
| CPI-Palo Alto Facilities   | Palo Alto, CA            |
| GKN Aerospace Chem   | El Cajon, CA             |
| Northrop Grumman Corp  | Rolling Meadows, IL      |
| Worldwide Aeros  | Tustin, CA               |
| Lockheed Martin - Engineering  | Littleton, CO            |
| The Boeing Company   | Heath, OH                |
| Jefferson Science Assoc  | Newport News, VA         |
| Haas Tcm Inc   | West Chester, PA         |
| Raytheon, Infrared Operations  | Goleta, CA               |
| Raytheon, Tech Svc Co Llc  | Otis, KS                 |
| Stanford Linear Accelerator Center (SLAC), United States Department of Energy National Lab | Menlo Park, CA           |
| UCLA   | Los Angeles, CA          |

### **How is the Federal Helium Program authorized and funded?**

The Helium Privatization Act of 1996 (HPA) authorizes BLM to sell helium from the reserve with the primary goals of supplying helium to meet the needs of Federal helium users and paying off money borrowed to initiate the Program, the "repayable amounts", also known as the helium debt. The Federal Helium Program is funded with money from helium sales, storage fees and related revenues that are credited to the helium production fund. Any money in the helium production fund in excess of the amount needed to operate the federal helium program is paid to the Treasury in order to repay the helium debt. When the helium debt has been repaid, current law requires that the helium production fund shall be terminated.

### **When will the helium debt be repaid?**

Under the provisions of the HPA, the BLM is scheduled to make its final payment to pay off the helium debt on or before October 7, 2013. Once the debt is paid off, the helium production fund will terminate and all helium receipts shall be deposited in the general fund of the U.S. Treasury.

### **What is the BLM doing ahead of the possible lapse or shutdown of the Federal Helium Program?**

The BLM is working to ensure that affected employees, helium contractors, industry, federal helium users, private sector users, communities, and the Congress are notified of the possible lapse or closure of the Federal Helium Program and are aware of the risks associated with such a situation.

The BLM is also involved in contingency planning should a shutdown become necessary after October 7, 2013. Planning efforts include communications (both internally and externally); contingency planning for emergency furloughs; minimizing financial impacts to our nation; preparing for the orderly shutdown of all Federal facilities; and continued monitoring of health and human safety.

### **When will the BLM begin the systematic shutdown of all Federal facilities?**

Absent Congressional action, the BLM will begin the systematic shutdown of the crude helium enrichment unit (CHEU), pipeline, and storage reserve on October 1, 2013. This is essential to maintain mechanical integrity of the process, facilities, public safety, and minimize losses of crude helium. Through experience in operating and maintaining the facilities, the BLM has determined that a minimum of 14 days is required to complete a systematic shut down of helium processing and distribution.

### **What are some of the risks or consequences associated with a shutdown of the Federal Helium Program?**

A shutdown of the Federal Helium Program (Bush dome reservoir, Cliffside helium plant and helium pipeline) will have major consequences including:

- National and global shortages of helium with impacts to national security, government, private, and military operations.
- Loss revenue to the U.S. Treasury averaging \$430,000/day from crude helium sales, royalties and other related operations.
- Federal users of helium across multiple agencies, as well as private helium users, will lose access to affordable helium.

- Local economic impact in Amarillo, Texas: Impacts to 47 BLM helium employees and the loss of Payments In Lieu of Taxes (PILT), building leases, and other service contracts.
- An unknown impact on the stability of the Bush Dome, a proven storage reservoir.
- Private helium refiners along the 450 mile Federal helium pipeline are at production and financial risk and may lose access to their own helium stored in the helium reserve.
- Litigation against the Federal government may occur due to contractual obligations and issues.

#### **What activities will be required for the shutdown of the Federal Helium Program?**

The following activities will be required for an orderly shutdown of the Federal Helium Program but will not be authorized or funded:

- Security and maintenance for the Cliffside Plant, Satanta Maintenance Station in Kansas, the helium pipeline and the Amarillo Field Office.
- About 32 natural gas wells that are directly associated with the Bush Dome reservoir would need to be shut in and maintained.
- Infrastructure and environmental remediation of the federal helium facilities (buildings, pumps, compressors, pipeline etc.).
- BLM customer service would cease including information requests, sample analysis, administration of existing contracts, and data collection. This could also impact helium operations in Colorado, Utah, and Wyoming, all of which rely on data from the Federal Helium Program in Amarillo.
- Staff to collect payments for fourth quarter helium sales from private industry would need to shift to either excepted employees or other BLM offices.

#### **Will private helium refiners who hold contracts with the Federal Government continue to receive crude helium from the Federal Helium Program?**

No. If the program does not have authorization to operate after the helium debt is paid off, all federal operations will cease and the employees that run the plant, the pipeline, offices, and reservoir will be furloughed.

Although the BLM plans to work closely with contract holders to minimize impacts to the extent possible, all current Operating Agreements with private refiners limits the obligations of the United States, including the BLM, to authorization by Congress. Once the helium debt is paid off on October 7, 2013, no authorizations are in place to allow for continued operation of the federal helium facilities.

#### **Is there anything that can prevent the October 7, 2013 shutdown of the Federal Helium Program?**

Yes. Congress may amend the HPA, pass new legislation to continue the Federal Helium Program, or provide helium program authorization in a continuing resolution that would allow production for another year.